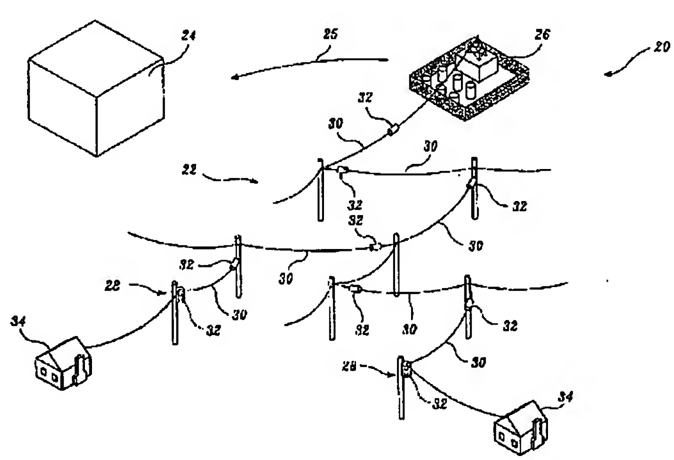
REMARKS/ARGUMENTS

Claims 1-14, 16 and 19-74 are pending in this application. Claims 15 and 17-18 have been cancelled.

The Office Action rejects claims 1, 3-4, 6-11, 14-17, 19, 21-26, 29-37, 39-46, 49, 51-58, 60, 62-69 and 71 under 35 U.S.C. §102(b) as being anticipated by Sumic (U.S. Patent No. 5,568,399). This rejection is moot as to claims 15 and 17, which have been cancelled. Applicant submits that Sumic fails to disclose or suggest the features of these claims of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection.

The Office Action asserts that Sumic discloses adjusting a zone protective function because "the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system." (Office Action page 2). However, Sumic is merely monitoring the topology of the power system and maintaining data as to the mapping of the circuit breakers or protection devices throughout the system for purportedly calculating which of the protective devices has already been triggered and is causing a power outage. Sumic shows a neighborhood power system with protective devices 32:



The "dynamic maintenance" by Sumic of the protective device schema is shown in digraph 64 and data structure 66, which maps the parent-child relationship between protective devices:

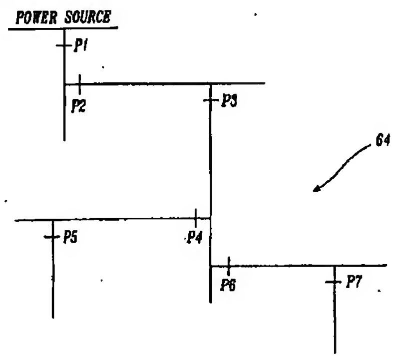


Fig. 4A.

PROTECTIVE DEVICE	BACKUP PROTECTIVE DEVICE
P7	P6
P6	P3
P3	P2
P2	P1
P4	P3
P5	P4

66

Fig. 4B.

This data is then utilized by Sumic in making a determination as to which of the protective devices has already been triggered. This determination is done through use of "fuzzy set theory" probability. (Sumic col. 7, lines 40-60). The "dynamic maintenance" by Sumic of the protective device schema does not detect a fault in the system but rather purportedly calculates via fuzzy set theory which protective device has already been triggered and is causing the consumers power outage. Moreover, Sumic does not disclose or suggest adjusting a zone protective function that detects a fault, let alone making such an adjustment based at least in part upon the monitored topology or changes to the topology, as in the claimed invention.

Sumic relies upon monitoring of power outages via customer calls, and also states that automated meter-reading systems can be used that "sense power loss at the terminal nodes and signal the control station via wireless communication." (Sumic col. 7, lines 5-12). This is not an adjustment of a zone protective function for detecting a fault in the power distribution system. Updating of the protective device schema in data structure 66 purportedly allows Sumic to locate

a protective device in the neighborhood that has already been triggered. Such updating of the protective device schema in data structure 66 is not used for adjusting a zone protective function that detects a fault.

As a non-limiting example of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection, applicants' specification describes:

> In an exemplary embodiment, protection system 26, can perform dynamic zone protective functions for the zones of protection of power distribution system 105. The dynamic operation of system 26, and its capability of adjusting the zone protection functions, including, but not limited to, the algorithms and/or the coefficients associated with the algorithms, accounts for changes in the topology within the zone of protection, as well as throughout the entire circuit (Specification par. 0089).

As a further non-limiting example, applicants' specification describes application of the claimed methodology and the claimed systems with use of bus differential as the zone protective function based upon a change to the zone of protection as shown in FIGS. 9 and 10:

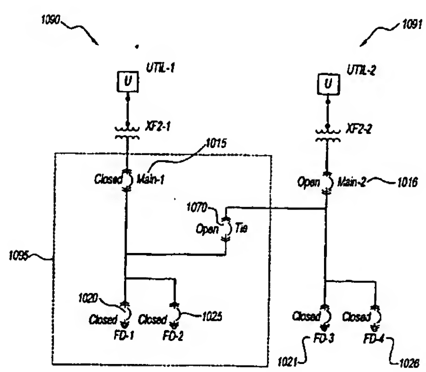


FIG. 9

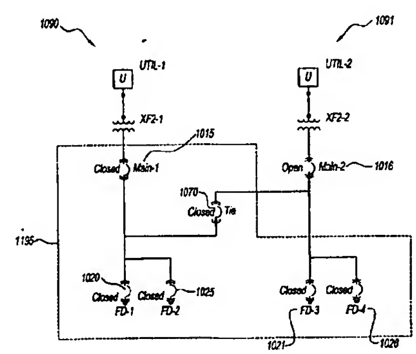


FIG. 10

Applicants' specification describes the non-limiting example of the adjusting of the zone

protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection as follows:

> If the configuration of power distribution system 105 were changed by closing tie CB 1070 (as shown in FIG. 10), then the tie CB would be a power sink of zone 1095. Again applying equation one to zone 1095 where tie CB 1070 is now closed, provides a bus differential function defined by equation three:
>
> $$i_r = i_{main\text{-}1} - (i_{feeder\text{-}1} + i_{feeder\text{-}2} + i_{tie})$$
>
> where $i_{main\text{-}1}$ is the current at main-1 CB 1015, $i_{feeder\text{-}1}$ is the current at feeder-1 CB 1020, $i_{feeder\text{-}2}$ is the current at feeder-2 CB 1025 and i_{tie} is the current at tie CB 1070. CCPU 28 has all of the information for the device status available to it at the same time as all of the information for the current. Based upon the state or topology of power distribution system 105, and, in particular, the state or topology within zone 1095 with tie CB 1070 now closed, CCPU can apply equation three for determining the residual current within the zone. The ability for CCPU 28 to have the state information at the same time as the current, allows CCPU 28 to apply the correct algorithm for the bus differential protection function, and avoids application of the erroneous equation two causing a false trip within zone 1095. The protection function can continue effectively uninterrupted to provide the same protection to the new state, topology or configuration within zone 1095. (Specification par. 0094).

The zone protective function to detect a fault is adjusted based at least in part upon the topology or changes to the topology. Such adjustment prevents use of erroneous algorithms resulting from the different configuration of the circuit. Sumic does not disclose or suggest the features of claims 1, 3-4, 6-11, 14, 16, 19, 21-26, 29-37, 39-46, 49, 51-58, 60, 62-69 and 71 of adjusting a zone protective function for detecting a fault in the zone of protection based at least in part upon the monitored topology or changes to the topology, but merely maintains an up-to-date mapping of the protective devices so that this data can be used via fuzzy set theory to determine which protective device has already been tripped and is causing the power outage for the neighborhood.

The Office Action rejects claims 2, 5, 18, 20, 38, 50, 59, 61, 70 and 74 under 35 U.S.C. §103 as being obvious over Sumic in view of Finn (U.S. Patent No. 6,728,205). This rejection is moot as to claim 18, which has been cancelled. Claims 2, 5, 20, 38, 50, 59, 61, 70 and 74

include the feature of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection. As described above, Sumic does not disclose or suggest these features.

Similarly, Finn does not disclose or suggest the feature of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection. Finn describes a dynamic routing system for a signal between a source and a destination where multiple trees connected to various nodes are determined as contingency paths as shown in FIG. 2:

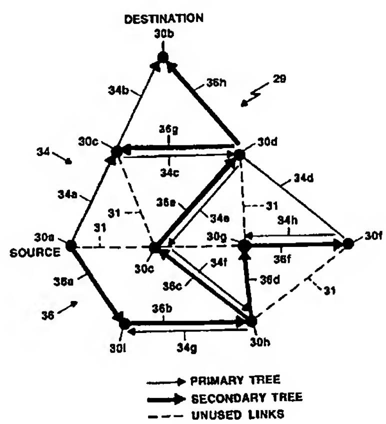


Figure 2

The re-routing of the signal can be based upon information received by automatic protection switch processor 14:

> In general overview and taking network node 12a as representatives of nodes 12b-12e, network node 12a includes an automatic protection switch (APS) processor 14, a routing table 16 and a protection switching module 18. APS processor 14 receives information describing the network 10. Such information typically includes, but is not limited to, the number of nodes to be connected in the network, the number of links which exist in the network, traffic load, information identifying which of the paths 20 are available to connect particular ones of nodes 12 in existing network 10, the nodes and links which should be used to re-route signals in the event of a failure, etc . . . . (Finn col. 15, lines 14-25).

Finn does not disclose the features of claims 2, 5, 20, 38, 50, 59, 61, 70 and 74 of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection.

The Office Action rejects claims 12-13, 27-28, 47-48 and 72-73 under 35 U.S.C. §103 as being obvious over Sumic in view of Nelson (U.S. 2005/0251296). Claims 12-13, 27-28, 47-48 and 72-73 include the feature of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection. As described above, Sumic does not disclose or suggest these features.

Similarly, Nelson does not disclose or suggest the feature of adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection. Nelson describes a power distribution reconfiguration system:

> Intelligent, distributed control methodology is illustrated in U.S. Pat. Nos. 6,018,449, 6,111,735, 6,243,244 and 6,347,027. While these systems may be generally suitable to perform their intended functions, it is advantageous to determine how to optimally reconfigure a complex distribution circuit while preventing overloading of any portion of the circuit; i.e. allocation of system resources. This becomes particularly difficult in circumstances where the circuit branches out (bifurcates) such that multiple load-side switches could attempt to simultaneously pick up additional load and overload the circuit. (Nelson par. 0013).

Nelson describes an integrity check state:

> FIG. 5 shows the flow chart which illustrates a process employed for the integrity check state. In this state, each node checks to ensure that the database records contained in its memory appear to be synchronized, that there are no error conditions, and that the nodes are in the correct states. In step 512 the node checks the database sequence numbers to ensure that they all match. In this way, the node can ensure that the records in the database from each node are all from the same synchronization process. (Nelson par. 0080).

Nelsón also describes nodes being able to close their respective switches:

> Assume that all of the conditions are met to allow the switch at node 108G to be able to close. Through the use of the conditions listed in Tables 1 and 2, the node can determine on its own whether or not it can close its associated switch. Additionally, only one message had to be sent to enable node 108G to act to restore service--the message from 108C. In the illustrative embodiment of the present invention, and in the case where the team includes protective devices such as breakers or reclosers, the normally-open switch is thus closed with the additional assurance that the protective settings of all of the source-side team members have been preselected to handle the additional load. If the conditions were not met to allow the switch to be able to close, then node 108G would go to step 640 and execute the synchronization and error check routine. If an error is detected during this time then at step 642 it is recorded and the transfer is stopped. Otherwise, at step 652 a check is made to see if this is the first iteration of the loop. If it is the first iteration the local record is transmitted to the nearest neighbors at step 653. If it is not the first iteration then the process continues at step 638 to determine whether the normally open switch can be closed. (Nelson par. 0126).

Nelson does not disclose or suggest the features of claims 12-13, 27-28, 47-48 and 72-73 of adjusting a zone protective function that detects a fault, let alone making such an adjustment based at least in part upon the monitored topology or changes to the topology.

In view of the above, applicants respectfully urge that the rejections be reconsidered and withdrawn, and that this application be passed to allowance.

Sincerely,

4/20/06
Date

Paul D. Greeley
Reg. No. 31,019
Attorney for Applicants
Ohlandt, Greeley, Ruggiero
& Perle, LLP
One Landmark Square, 10th Floor
Stamford, CT 06901-2682
telephone (203) 327-4500
fax (203) 327-6401